



ORIGINAL RESEARCH PAPER

Oncology/Radiotherapy

OPTIC NERVE DYSFUNCTION CAUSED BY ZOLEDRONATE: A RARE CASE REPORT

KEY WORDS: Zoledronic acid, optic nerve dysfunction, carcinoma prostate

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ABSTRACT

Background: Zoledronate is an antiresorptive therapy used to treat various bone conditions, including both malignant and benign diseases. It is usually very well tolerated and the side effects are usually acute and mild. We report a very rare case of zoledronic acid induced optic nerve dysfunction which needs early recognition and management. **Case report:** We report a case of 78 year old male adenocarcinoma prostate Gleason score 4+3 who developed local recurrence with skeletal metastasis in February 2023. After 4 cycles of zoledronate, patient developed decreased vision in left eye. Visual acuity decreased and colour vision was defective. Both eyes PVEP showed reduced amplitude of P100 waves in the left eye compared to right eye which was suggestive of optic nerve dysfunction in the left eye which was probably zoledronic acid induced. Patient recovered gradually on withdrawal of the drug. **Conclusion:** The ocular complications of zoledronate are very rare. The reported side effects occurred acutely like uveitis, scleritis, episcleritis caused by inflammatory stimulus mediated by proinflammatory cytokines and T helper cells. Here we report a case of optic nerve dysfunction that presents gradually. Hence we suggest that patients; especially elderly and those with pre existing ocular problems should be seen by an ophthalmologist prior to zoledronic acid administration and have periodic eye check up after every cycle.

INTRODUCTION

Zoledronate, also known as zoledronic acid, is an intravenous (IV) medication that belongs to a class of drugs known as bisphosphonates.¹ It is an antiresorptive therapy used to treat various bone conditions, including both malignant and benign diseases. Zoledronic acid is the most widely used bisphosphonate as it has very short infusion time and high potency. It binds to hydroxyapatite and accumulates in the bone, thus inhibiting osteoclast migration and maturation. Food and drug administration (FDA) approved indications for this agent include the prevention and treatment of osteoporosis in postmenopausal females, osteoporosis in males, glucocorticoid-induced osteoporosis, Paget's disease of bone, hypercalcemia of malignancy, multiple myeloma, and solid tumor bone metastases.²⁻⁸ Zoledronate is usually well tolerated. The side effects of zoledronic acid usually reported are low grade fever, arthralgia, myalgia, fatigue, nausea, constipation, increased bone pain, deranged serum electrolytes (calcium, magnesium, phosphorus) and serum creatinine.⁹ Certain ophthalmologic complications have been reported which are very rare like anterior uveitis, episcleritis, scleritis, conjunctivitis, iritis and orbital inflammation.¹⁰⁻¹¹ Here we report a very rare case of zoledronic acid induced optic nerve dysfunction which needs early recognition and management.

Case Report

We report a case of 78 year old male adenocarcinoma prostate Gleason score 4+3, diagnosed in 2018. He received radical radiation to pelvis 45Gy/23# and antiandrogen therapy and was on regular follow up. He developed local recurrence with skeletal metastasis in February 2023. He was started with hormonal therapy Leuprolide 22.5mg IM 3 monthly, bicalutamide and zoledronic acid 4mg monthly. Zoledronic acid 4mg was given as intravenous infusion over 20 min in 100ml normal saline monthly. After 4 cycles of bisphosphonates, patient presented with complaints of decreased vision of the left eye. Ophthalmologist opinion was immediately sought. Vision was 6/18 in the right eye and 6/24 in the left eye. Colour vision was defective. Early cataract changes were found in the lens. Intraocular pressure was normal. Fundus examination showed arteriolar attenuation. Visual fields (Octopus G Dynamic) were within normal limits. The findings did not correspond to the vision loss he had. To rule out demyelinating, compressive and infiltrative

causes of optic neuropathy, MRI Brain and MRI orbit with PNS was done which was found to be normal. Both eyes PVEP showed reduced amplitude of P100 waves in the left eye compared to right eye which was suggestive of optic nerve dysfunction in the left eye which was probably zoledronic acid induced. Bisphosphonate was immediately withheld. Patient had gradual improvement in vision on withdrawal of the drug.

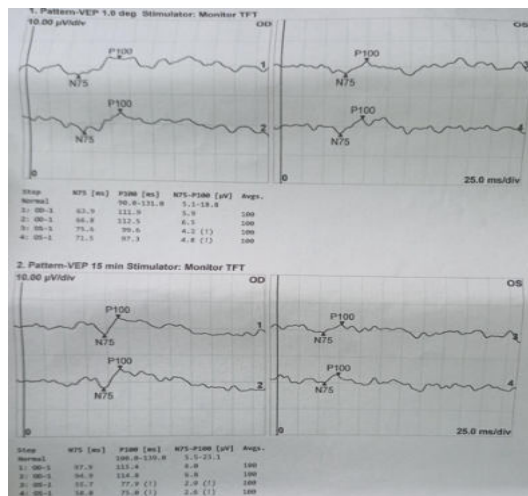


Figure 1: PVEP showing reduced amplitude of P100 waves in left eye.

CONCLUSION

The ocular complications of zoledronate are very rare. The reported side effects occurred acutely like uveitis, scleritis, episcleritis caused by inflammatory stimulus mediated by proinflammatory cytokines and T helper cells. Here we report a case of optic nerve dysfunction that presents gradually. Hence we suggest that patients; especially elderly and those with pre existing ocular problems should be seen by an ophthalmologist prior to zoledronic acid administration and have periodic eye check up after every cycle.

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